## City of Aurora, Colorado Maintenance Vehicle Management System

In 1998 the City of Aurora, Colorado deployed a system to monitor the operation of maintenance vehicles, including snowplows and street sweepers. The system has facilitated real-time communication between maintenance managers and vehicle drivers, enhanced productivity, and improved public relations.

*System Components*: The maintenance vehicle management system is comprised of in-vehicle devices, central control systems, and a wireless communication system. Approximately 30 snowplows are equipped with integrated display, messaging, and communication devices. With these in-vehicle devices, text messages can be entered with a keypad, displayed to drivers, and transmitted between maintenance vehicles and central computers via a Cellular Digital Packet Data modem. Each in-vehicle device also includes an interface to vehicle systems and a Global Positioning System receiver, which is used to automatically track equipment status and vehicle location from control computers in two central facilities.

**In-Vehicle Device**

*System Operations*: Central control systems allow maintenance managers to transmit pre-programmed or customized messages to a single plow, a selected group of plows, or all snowplows. Managers can monitor road treatment activities with a map display of snowplow locations to assess which routes have been serviced, determine when a plow is off of its designated route, and plan route diversions as needed. The status of vehicle systems may also be monitored to ascertain whether plow blades are up or down and to determine when treatment materials are being dispensed. The management system is utilized for treatment strategy planning, real-time operations monitoring, and post-event analysis.

*Transportation Outcome*: By using the management system to track maintenance vehicles, managers have minimized treatment costs and improved productivity by nearly 15 percent. Additionally, managers can easily access the system and provide accurate information to citizens who call the City to inquire about plowing of a particular street.

*Implementation Issues*: The City contracted with a private vendor to furnish and install in-vehicle and central components of the management system. System deployment was expedited by involving the City's information systems staff in planning and design, and by hiring a local system integrator to resolve compatibility issues related to the various component and communications providers.

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